

Some Useful Matlab and Control Systems Toolbox Functions

Creating and converting linear models

tf	- Create (or convert to) a transfer function model.
zpk	- Create (or convert to) a zero/pole/gain model.
ss	- Create (or convert to) a state-space model.
feedback	- Feedback connection of two systems.
c2d	- Continuous to discrete conversion.
d2c	- Discrete to continuous conversion.

Model analysis

dcgain	- D.C. (low frequency) gain.
bandwidth	- System bandwidth.
pole, eig	- System poles.
zero	- System zeros.
pzmap	- Pole-zero map.
damp	- Natural frequency and damping of system poles.
ltiview	- Response analysis GUI (LTI Viewer).
step	- Step response.
impulse	- Impulse response.
lsim	- Response to arbitrary inputs.
bode	- Bode diagrams of the frequency response.
ctrb	- Controllability matrix (for ss models).
obsv	- Observability matrix (for ss models).

Design tools

place	- MIMO pole placement.
acker	- SISO pole placement.
sisotool	- SISO design GUI (root locus and loop shaping techniques).
rlocus	- Evans root locus.
rltool	- Runs the SISO design GUI set up for root locus.

Data visualization and storage

figure	- Create figure window.
clf	- Clear current figure.
plot	- Plot data.
stairs	- Stair-step graph.
save	- Save workspace variables to disk.
load	- Load workspace variables from disk.

Simulink – Matlab

trim	- Finds steady state parameters for a Simulink system.
linmod	- Linearize a Simulink model around an operating point.